

1 1. A method of preparing a pre-formed integrated circuit chip for
2 encapsulation in an electronic package, comprising the steps of:
3 forming an interconnect assembly separately from said pre-formed integrated
4 circuit chip;
5 forming a plurality of conductive bumps connected to the terminals of the
6 integrated circuit chip;
7 bonding said interconnect assembly to said prepared integrated circuit chip; and
8 passivating said bonded interconnect assembly and said prepared integrated
9 circuit chip into an integral structure to provide said electronic package.

1 2. The method of claim 1 wherein said step of forming an interconnect
2 assembly comprises forming said interconnect assembly on a releasable substrate.

1 3. The method of claim 1 wherein said step of forming an interconnect
2 assembly comprises forming at least one test pad in an interconnect layer, which at
3 least one test pad can be accessed and electrically connected on opposing sides of
4 said test pad.

1 4. The method of claim 3 wherein said step of forming at least one test pad
2 forms a test pad having gold on opposing sides of said test pad and sandwiched
3 therebetween a conductive field metal.

4 5. The method of claim 3 wherein said step of forming an interconnect
5 assembly comprises forming at least one test pad in a plurality of stacked interconnect
6 layers, each of which at least one test pad in each interconnect layer can be accessed
7 and electrically connected on opposing sides of said test pad.

1 6. The method of claim 5 wherein said step of forming at least one test pad
2 in a plurality of stacked interconnect layers forms at least one test pad in each layer
3 having gold on opposing sides of said test pad and sandwiched therebetween a
4 conductive field metal.

1 7. The method of claim 1 where said step of forming a plurality of conductive
2 bumps connected to the terminals of the integrated circuit chip form a metallic bump
3 making connection to a terminal on said integrated circuit chip and a solder layer
4 disposed on said metallic bump.

1 8. The method of claim 7 wherein said step of forming an interconnect
2 assembly comprises forming at least one test pad in an interconnect layer, which at
3 least one test pad can be accessed and electrically connected on opposing sides of
4 said test pad, and wherein said step of bonding said interconnect assembly to said
5 prepared integrated circuit chip flip bonds said solder layer onto one side of said test
6 pad.

1 9. The method of claim 1 where said step of passivating said bonded
2 interconnect assembly and said prepared integrated circuit chip into an integral
3 structure to provide said electronic package comprises underfilling said prepared
4 integrated circuit chip with an insulating material to remove all voids between said
5 prepared integrated circuit chip and said interconnect assembly.

1 10. The method of claim 1 where said step of passivating said bonded
2 interconnect assembly and said prepared integrated circuit chip into an integral
3 structure to provide said electronic package comprises potting said interconnect
4 assembly and said prepared integrated circuit chip into an integral package.

1 11. The method of claim 9 where said step of passivating said bonded
2 interconnect assembly and said prepared integrated circuit chip into an integral
3 structure to provide said electronic package comprises potting said interconnect
4 assembly and said prepared integrated circuit chip into an integral package.

1 12. The method of claim 10 further comprising the step thinning said prepared
2 integrated circuit chip.

1 13. The method of claim 10 further comprising the step of accessing said
2 prepared integrated circuit chip through electrical connection to said at least one test
3 pad through a surface thereof opposing said surface of said test pad contacting a

4 terminal of said prepared integrated circuit chip to test said prepared integrated circuit
5 chip.

1 14. The method of claim 10 wherein a plurality of interconnect assembly and
2 prepared integrated circuit chips are bonded together to form a corresponding plurality
3 of electronic packages and further comprising the step of releasing said plurality of
4 electronic packages from each other.

1 15. The method of claim 1 wherein a plurality of interconnect assembly and
2 prepared integrated circuit chips are bonded together to form a corresponding plurality
3 of electronic packages and further comprising the step of testing said interconnect
4 assembly and bonding a tested interconnect assembly in said step of bonding said
5 interconnect assembly to said prepared integrated circuit chip only if said interconnect
6 assembly tested good.

1 16. The method of claim 15 where said step of forming said plurality of
2 interconnect assemblies comprises forming said interconnect assemblies
3 simultaneously in a wafer and where said plurality of prepared integrated circuit chips
4 are individually bump bonded to successfully tested ones of said interconnect
5 assemblies.